



Enhancing Student Creativity through the Implementation of Loose Parts

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Abstract: This article investigates the incorporation of loose parts as a means to enhance student creativity within educational environments. Loose parts refer to flexible, movable objects that can be manipulated, combined, and repurposed in various ways. The study delves into the theoretical underpinnings that support the connection between loose parts and creativity, highlighting the significance of hands-on, interactive learning experiences. The research employed a quantitative approach to assess the improvement in students' creativity, utilizing t-test as the measurement tool. The analysis technique employed non-parametric inferential statistics and involved a sample of 20 students from Junior High School 4 in Malang. The findings of this study indicated a notable increase in student creativity through the implementation of loose parts in the learning process. Consequently, based on these results, it is recommended that educators consider incorporating loose parts to foster creativity among students.

Keywords: Creativity, Loose Parts, Learning Development

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Introduction

Student creativity is a fundamental aspect of education that allows individuals to express themselves and think outside the box. One effective way to enhance student creativity is through the implementation of loose parts in the classroom. Loose parts are open-ended materials that can be manipulated, combined, and transformed in various ways. These materials can range from simple everyday objects such as buttons, sticks, and fabric scraps to more complex items like blocks and building materials. By providing students with a wide array of loose parts, educators can foster creativity and imagination, encouraging students to explore and innovate.

The concept of an idea can be understood as a form of creation. The evaluation of an idea's creativity is typically based on its level of novelty and usefulness (Amabile & Pratt, 2016). While ideas are undoubtedly a product of creativity, it is worth considering whether creativity should be exclusively defined in terms of ideas. For instance, a creator, such as a chef, may conceive a new recipe for a dish. However, the final product may not be deemed creative, tasteful, or useful by the patrons. Consequently, the dish would not be included on the menu (Walia, 2019). According to the definition of "novelty and usefulness" proposed by Amabile and Pratt (2016), the chef would not be regarded as creative based on the judgment of individuals who were likely not involved in the creative process.

The relationship between creativity and learning is a topic of significant interest in educational research. It is widely acknowledged that creativity plays a crucial role in the learning process, as it enhances students' engagement with the material and facilitates their retention of information. Moreover, creative thinking can enable students to approach problems from novel and innovative perspectives, thereby promoting deeper understanding and more effective problem-solving skills (Karwowski et al., 2020). In the contemporary era, creative thinking has emerged as one of the most highly valued skills in both personal and professional contexts. However, the demand for creativity far exceeds the degree to which it is currently available and developed (Ritter et al., 2020). This highlights the need for educational institutions to prioritize the cultivation of creativity among students, in order to equip them with the skills necessary to succeed in the 21st century.

The concept of a creative growth mindset, which places importance on acknowledging and learning from mistakes and striving for improvement, is closely associated with the attitudes and emotions of teachers when confronted with uncertainty (Anderson et al., 2021). The development of creative growth is contingent upon individuals being receptive to vulnerability and being willing to undertake risks, particularly in the face of uncertainty, which is a fundamental aspect of the creative process (Amabile, 2017). In fact, the act of taking intellectual risks serves as a moderator between creative confidence and actual creative behavior and achievement in various domains; if an individual is unwilling to take intellectual risks, the connection between

creative confidence and behavior becomes null (Beghetto et al., 2021). Furthermore, the growth of individuals also relies on the personal significance and fulfillment derived from their work as educators. However, high levels of stress and a lack of encouragement hinder the likelihood of engaging in creative risk-taking (Beghetto, 2019).

It is imperative to take into account physical activity and movement during the early stages of life to guarantee that students establish and sustain healthy physical activity routines. Recent research has underscored the significance of outdoor activities and the surroundings in which students are raised. Outdoor activities, particularly unstructured, foster self-sufficiency, self-control, and enable students to investigate their surroundings and make informed choices (Spencer et al., 2019). By integrating loose parts into the activity spaces of students and providing minimal or no guidance, children are afforded the opportunity to interact with objects in a manner of their choosing (Gibson et al., 2017). The utilization of loose parts enables children to fashion their experiences based on their own concepts and objectives, rather than being constrained by materials with predetermined purposes (Änggård, 2011). The incorporation of loose parts can stimulate students to investigate their surroundings, take calculated risks during activities, and cultivate self-assurance and drive (Casey & Robertson, 2016).

The study conducted by Rianti et al (2022) demonstrated that the implementation of the STEAM method, utilizing loose parts media with natural materials, has a multifaceted impact on the development of children. This impact encompasses various domains, including artistic, social-emotional, moral, language, cognitive, and physical aspects. Furthermore, Olsen & Smith (2019) discovered that a significant majority (83%) of the programs examined possessed appropriate surface materials within their outdoor play areas. These outdoor spaces also incorporated loose parts, such as toys, balls, and action figures.

Moreover, Fikriyati et al (2023) research expanded upon this by incorporating musical instruments, such as sand-filled bottles, which added an artistic dimension to the learning experience. This allowed students to engage in activities such as listening to, imitating, and singing ship-related songs, thereby enriching their artistic development. Additionally, Askar & Durmusoglu's (2023) study emphasized the positive effects of loose parts on children's motivation to learn, overall happiness, and various social behaviors. It also highlighted the role of loose parts in increasing parental participation by fostering communication and interaction between parents and schools. These findings suggest that loose parts support children in multiple ways, contributing to their overall development and enabling them to become independent and capable individuals who can actively engage in their own learning through the provision of high-quality play experiences.

Therefore, this research focuses on the implementation of loose parts to enhance students' creativity. This is based on the identified gaps, namely (1) the impact of using loose parts with natural materials on students' development in various aspects has not been fully explored in depth. More research may be needed to understand the details, (2) there is a need to understand the extent to which the use of loose parts has a positive impact on students' development and how to improve its design and integration in children's education, and (3)

there is a need to explore how best to incorporate other tools and elements in the use of loose parts to enrich students' artistic development more effectively. Creativity is the dependent variable as a novelty in this study. The present study puts forth the following hypotheses: (H0) The utilization of loose parts does not result in an augmentation of creativity, whereas (H1) the utilization of loose parts leads to an enhancement of creativity.

Method

The present study employed a quantitative research design, utilizing a sample of 20 secondary school students as the experimental cohort. There are fundamental reasons why we selected it. Firstly, regarding the choice of quantitative, Creswell (2014) explains that quantitative involves studying how different factors (variables) relate to each other. These variables can be measured using instruments, which provide numerical data that can then be analyzed using statistical techniques. Secondly, it is important to note that the population under consideration is confined to a single class comprising 20 students.

Consequently, in order to analyze the data, non-parametric statistical techniques are employed, specifically the Wilcoxon test. This choice is justified by Gibbons (1993), who posits that non-parametric methods are suitable for datasets with limited sample sizes ($n < 30$) as they do not necessitate the fulfillment of specific distributional assumptions. Lastly, with respect to the selection of a secondary educational institution, Piaget (1988) elucidates that during stage 4 (from the age of 11 until adulthood), individuals engage in mental operations that are applied to abstract concepts, thereby fostering logical and systematic thinking. Consequently, it becomes intriguing to delve into this notion by means of an exploration of loose components.

The analysis technique used is the T test. A t test is a type of statistical test that is used to compare the means of two groups (Kim, 2015). It is one of the most widely used statistical hypothesis tests in pain studies (Yim et al., 2010). The t-test plays a crucial role in the field of pain research, enabling researchers to quantitatively assess the impact of various factors on pain outcomes and contributing to the advancement of our understanding of pain mechanisms and treatments. Its simplicity and effectiveness make it a valuable tool for researchers striving to enhance the quality of life for individuals dealing with pain-related conditions.

Results

In the initial phase of the T-test, a collection of pre-test and post-test data was undertaken to evaluate the creativity levels of a cohort comprising 20 students. In order to ascertain the presence of any disparities between the pre-test and post-test results, the Wilcoxon test was employed. The Wilcoxon test is classified as a non-parametric test, specifically designed to examine distinctions between two interrelated conditions, namely the pre-test and post-test outcomes pertaining to the creativity levels of the students. This particular test is deemed appropriate when the data fails to meet the fundamental assumptions of the t-student test, such as those pertaining to normality and homogeneity of variance, or when the data is measured on an ordinal scale.

Table 5. Ranks Test

		N	Mean Rank	Sum of Ranks
Posttest - Pretest	Negative Ranks	0 ^a	.00	.00
	Positive Ranks	16 ^b	8.50	136.00
	Ties	0 ^c		
	Total	16		

Table 6. Statistic Tests

Posttest - Pretest	
Z	-3.517 ^b
Asymp. Sig. (2-tailed)	.000

According to the calculation, it is evident that a distinction exists between the pre-training and post-training stages. Consequently, community service activities exert an influence on the level of students' creativity. The Wilcoxon analysis reveals a significant increase in creativity, as indicated by a significance value below 0.05. To quantify the extent of this increase, researchers employ the standard gain measure.

Table 7. Standard Gain

	N	Minimum	Maximum	Mean	Std. Deviation
Gain	16	.61	.98	.8578	.08857
Valid N (listwise)	16				

Based on the analysis conducted, the obtained value of 0.86 signifies a substantial increase in the utilization of used goods as learning media, thereby indicating a high level of creativity. This outcome demonstrates the effectiveness of the implemented approach in fostering students' creative abilities through the utilization of second-hand materials. Standardized improvement serves as an indicator of the effectiveness of the learning process, and a value approaching 1 signifies that learning is highly advantageous in attaining its objectives. Within this framework, the elevated standardized retrieval value affirms that this approach effectively stimulates students to engage in creative thinking and apply their cognitive abilities in an exceptional manner when utilizing scrap materials as a medium for learning.

Discussion

The use of loose parts in education can create opportunities for sustainability and learning with environments (Neill, 2018; Rotas, 2019). Chawla (2013) suggests that the use of loose parts in the landscape that students manipulate and use result in optimal creative involvement, which leads to a lifelong appreciation, concern, and

activism for the natural world. By providing open-ended materials, children can use their imagination and creativity to explore and learn about the world around them. Thus, the use of loose parts in environmental education can be an effective way to develop creativity, environmental love character education, and naturalist intelligence for students.

A study in Indonesia found that STEAM learning with loose parts media could increase children's creativity and imagination. The loose parts media used in this study were unique and natural, such as wood, stone, twigs, sand, and various objects around it (Karomah & Purnama, 2023; Nipriansyah et al., 2021).

A study in Malaysia found that the use of naturalistic loose-part media can help develop creativity in early childhood. The study used a phenomenological qualitative approach and found that naturalistic loose-part media is demonstrated using wood, stone, twigs, sand, and various objects around it. The results of this study have implications related to children's creativity to encourage teachers to use loose-part objects in learning (Tunas & Purnama, 2023).

A study in Indonesia found that the management of STEAM content learning with Loose Parts can be done by planning the form of learning, preparing loose parts, organizing teaching tasks, implementing the learning process, and assessing the learning outcomes. The study found that the implementation of early childhood learning with STEAM content made from Loose Parts can apply all stages of play by paying attention to playing strategies, cleaning, storing things, and strategies to develop early childhood creativity (Rahayu et al., 2022).

The findings of the aforementioned studies indicate that the utilization of Loose Parts Media in the context of learning can serve as a viable strategy for augmenting student's creativity and imagination. This discovery holds promising implications for educators and instructors who seek to incorporate Loose Parts materials into their pedagogical practices. The research aligns with the notion that Loose Parts can effectively enhance students' creativity by utilizing recycled materials as learning media. The statistical significance of the results, as evidenced by Wilcoxon scores and standardized gains, further corroborates the efficacy of this approach. As such, we strongly encourage educators and educational practitioners to consider integrating this concept into their teaching methodologies to achieve more effective learning outcomes and enhance student learning.

Conclusion

The present study investigated the impact of community service activities on the creativity of secondary school students, as measured by pre- and post-training assessments. The Wilcoxon analysis revealed a significant difference between the two stages, with a significant increase in students' creativity following the program ($p < 0.05$). Moreover, the standardized gain value of 0.86 indicated a substantial improvement in the use of used items as instructional media, suggesting a high level of creativity among the participants. These findings provide evidence for the effectiveness of this approach in stimulating the creativity of students through the utilization of

loose parts as instructional media.

Recommendations

To further strengthen the generalizability of these findings, future research should extend this study to a larger sample of secondary schools. Additionally, it would be beneficial to investigate the role of specific factors that may enhance secondary school students' creativity through community service activities and the utilization of used materials as instructional media. Such research could provide valuable insights into the development of creativity among secondary school students and inform the design of effective educational programs.

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